PVM-411CE

VIDEO MONITOR

SPECIFICATIONS

Television System:	CCIR standards
Picture Tube:	9.4cm, 4" (screen measured diagonally) 50° deflection
Semiconductors:	76 transistors and 80 diodes
Automatic Controls:	AFC (automatic frequency control) AVR (automatic voltage regulator)
Video input:	non-composite: 0.7V (p-p) ±6 dB, positive composite: 1.0V (p-p) ±6 dB, positive
Sync input:	4.0V (p-p) ±6 dB, negative
Video/sync input impedance:	High impedance for loop-through; 75 ohms terminated
Resolution:	280 lines, vertical (at center) 400 lines, horizontal (at center)
Anode Voltage:	9kV at zero beam current
Power Requirements:	220V ac, 50Hz
Power Consumption:	56W (max)
Dimensions:	Approx. 48.3 (w) x 13.3 (h) x 41.0 (d) cm Approx. 19 (w) x 5 1/4 (h) x 16 1/8 (d) inches
Net Weight:	Approx. 14.2kg (31 lb 5 oz)
Accessories Supplied:	Instruction manual

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

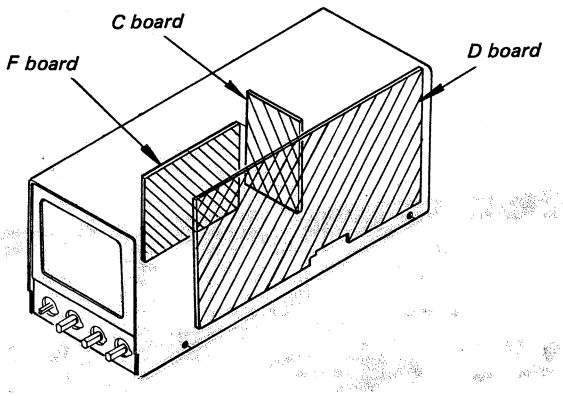
MICROFILM

SONY®

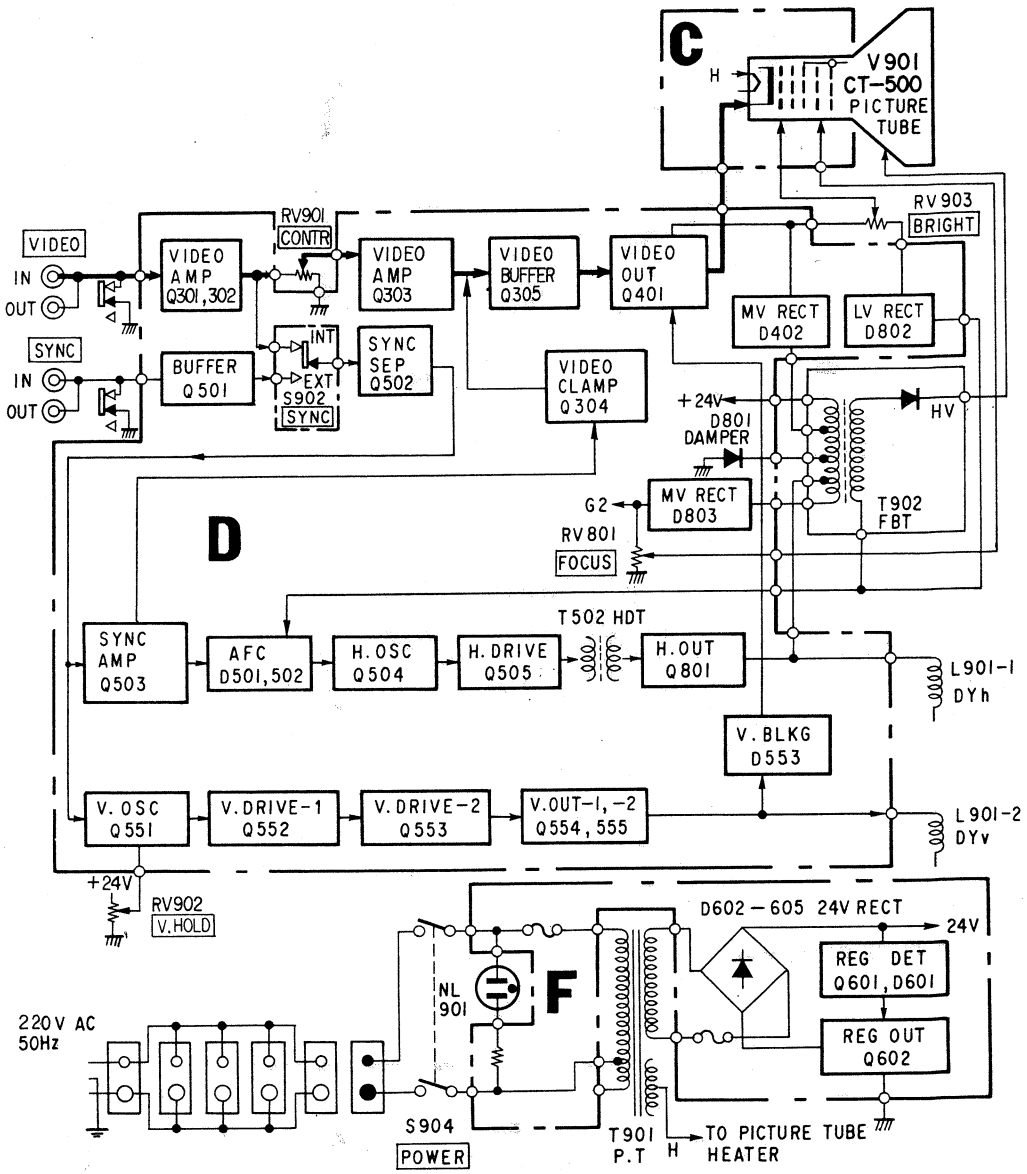
SERVICE MANUAL

MON

CIRCUIT BOARDS LOCATION



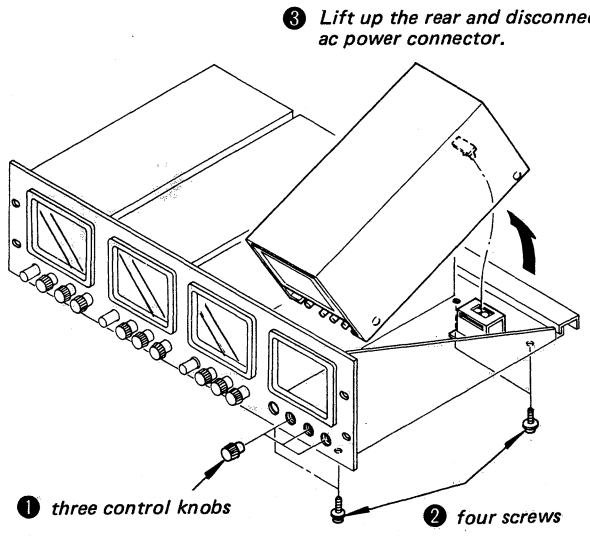
SECTION 1
BLOCK DIAGRAM



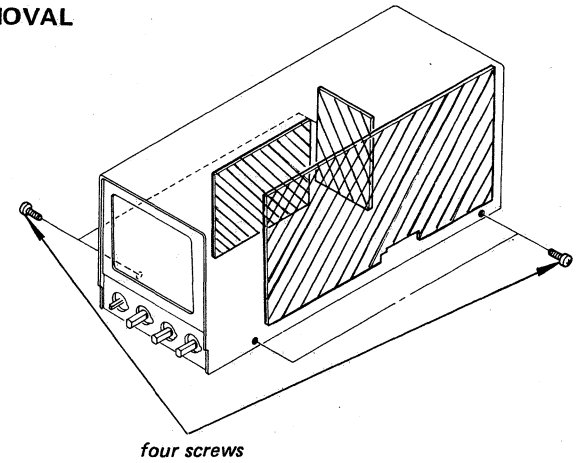
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

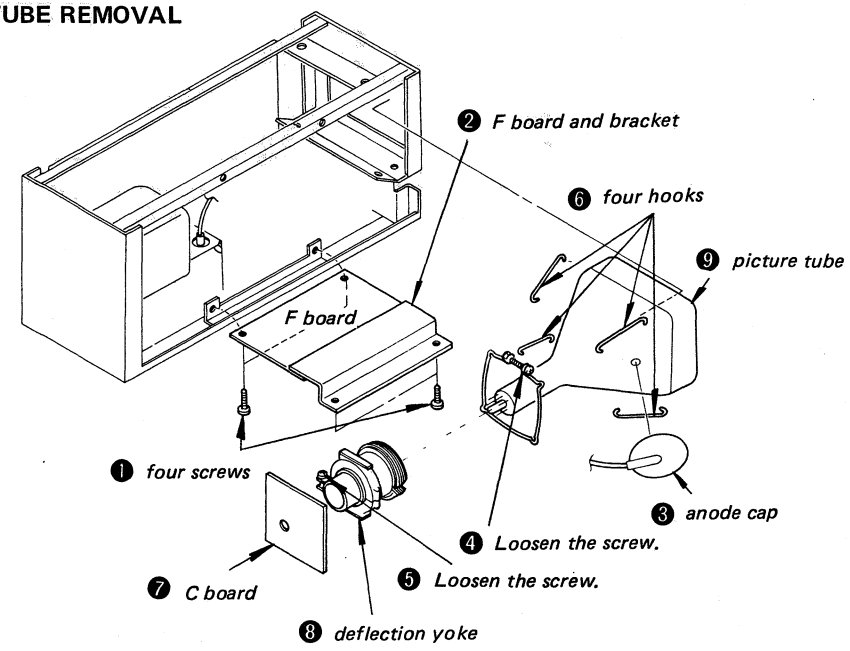
2-1. UNIT REMOVAL



2-2. COVER REMOVAL



2-3. PICTURE TUBE REMOVAL



SECTION 3
CIRCUIT ADJUSTMENTS

Note:

- Test Equipment Required
  1. Oscilloscope
  2. Video tuner SONY model VTU-200 or equivalent
  3. Pattern generator

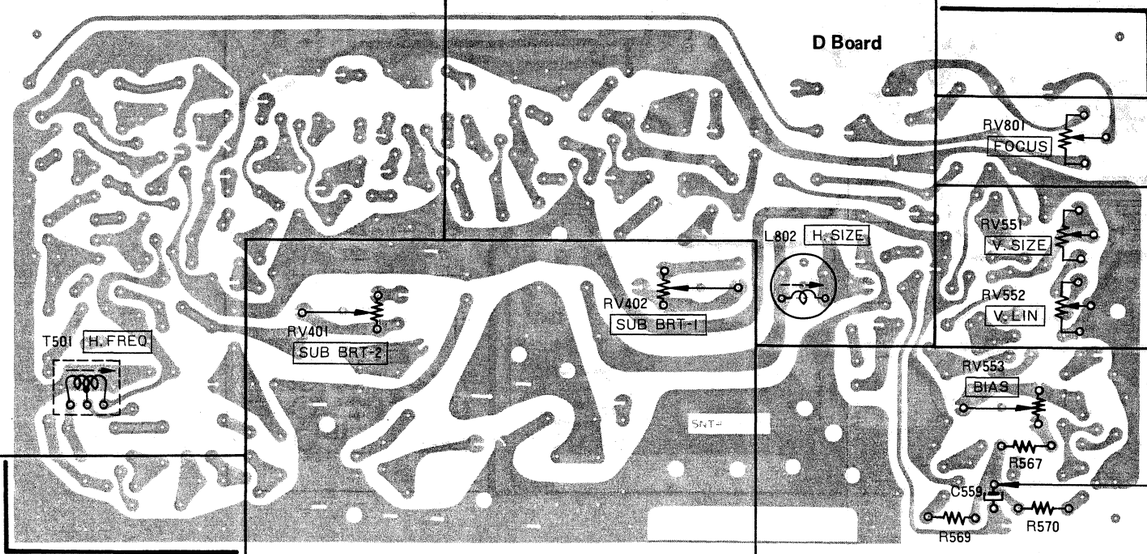
- Preparations
  1. Feed in a video signal.
  2. Set CONTR, BRIGHT and V.HOLD controls for best picture.
  3. These adjustments should be performed with the rated power supply voltage.

H.FREQ

1. *Set SYNC switch to EXT position, but no external synchronizing signal input.*
2. *Adjust T501 for stable picture.*
3. *Set SYNC switch to INT position and confirm stable picture is observed.*

H.SIZE

Adjust L802 for best picture.



FOCUS

Adjust RV801 for best focus.

V.SIZE and V.LIN

Adjust RV551 for best vertical size.
Adjust RV552 for best vertical linearity.

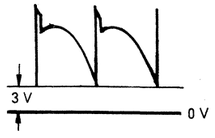
SUB BRT-1, SUB BRT-2

Note: When perform this adjustment, compare the incorrect set with a normal set, and adjust the incorrect set for same brightness tone of the normal set.
A indicates a normal set.
B indicates the incorrect set, necessary adjustments.

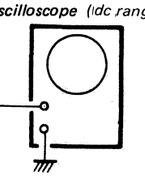
1. *Set BRIGHT controls of A and B to mechanical center. Set CONTR controls of A and B to fully counterclockwise.*
2. *Adjust RV402 of B for the same brightness tone as A.*
3. *Set CONTR controls of A and B to fully clockwise.*
4. *Adjust RV401 of B for the same brightness tone as A.*
5. *Set CONTR controls and BRIGHT controls of A and B to mechanical center. Confirm the brightness tone of both sets is the same.*
6. *If above step is not satisfied, repeat above procedure 1 to 5.*

BIAS

1. *Observe vertical synchronizing wave-form across C559 with a oscilloscope.*
2. *Adjust RV553 as shown below.*



oscilloscope (Idc range:)



4-1. MOUNTING DIAGRAM

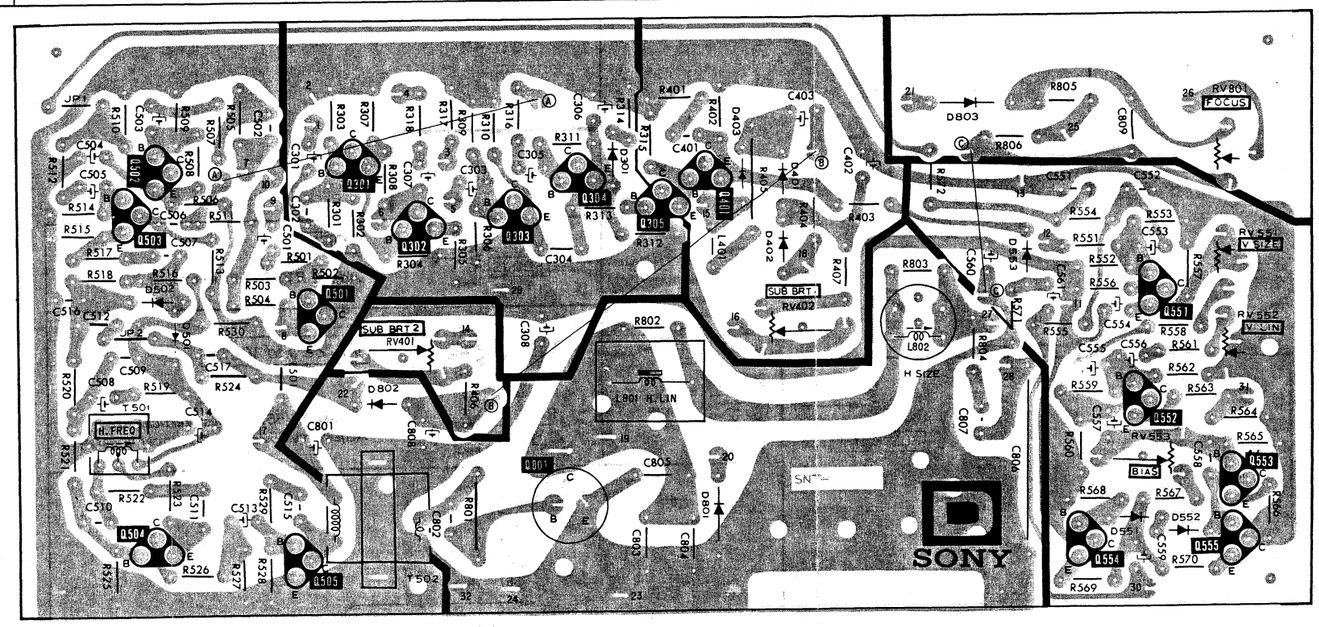
– Conductor Side –

A B C D E F G

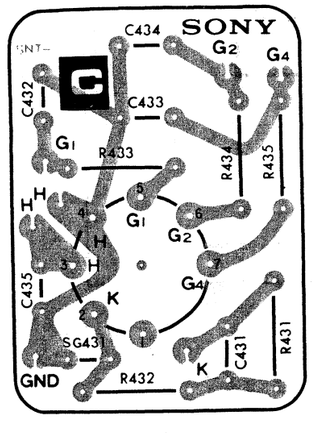
1 2 3 4 5

– D Board –

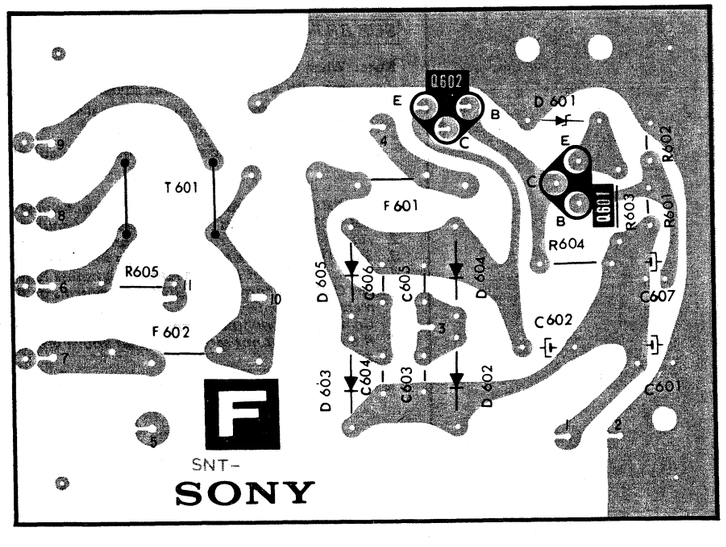
Q	503 502 504 501 505 301 302 303 304 801 305 401 554 551 552 553 555	Q
D	502 501 802 301 801 403 401 402 803 553 551 552	D
ADJ	T501 RV401 RV402 L802 RV553 RV801 RV551, RV552	ADJ



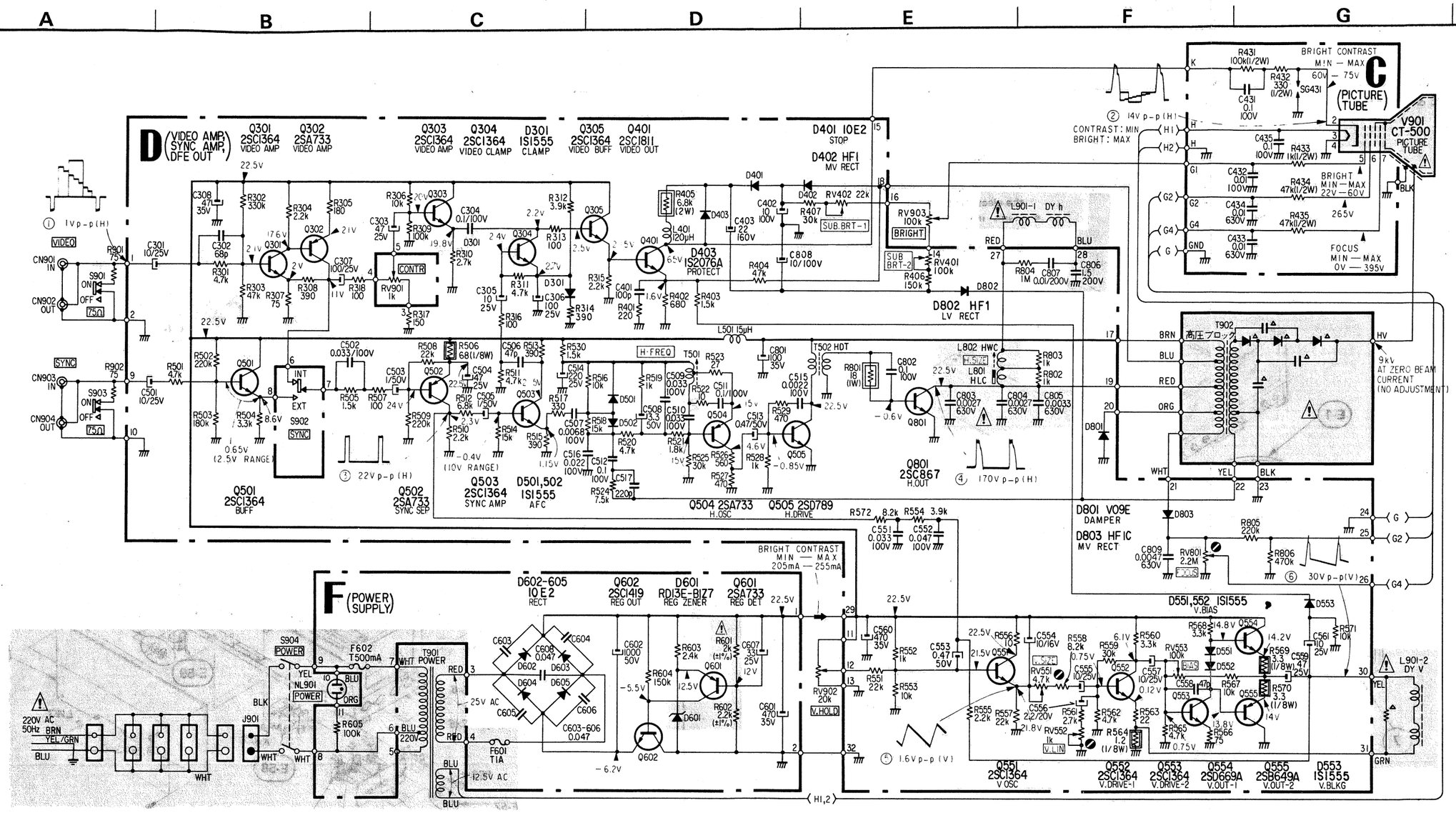
– C Board –



– F Board –



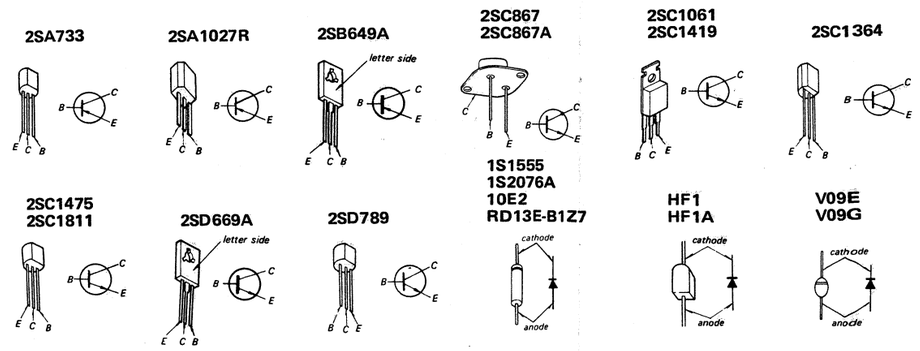
4-2. SCHEMATIC DIAGRAM



Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ: 1000Ω; MΩ: 1000kΩ
- ▭ : nonflammable resistor.
- △ : internal component.
- ▭ : panel designation.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 20,000-ohm-per-volt VOM. BRIGHT / CONTR } ---mechanical center
- Readings are taken with a color-bar signal input.
- [ ] : adjustment for repair.
- ⊘ : adjustable without removing cabinet.



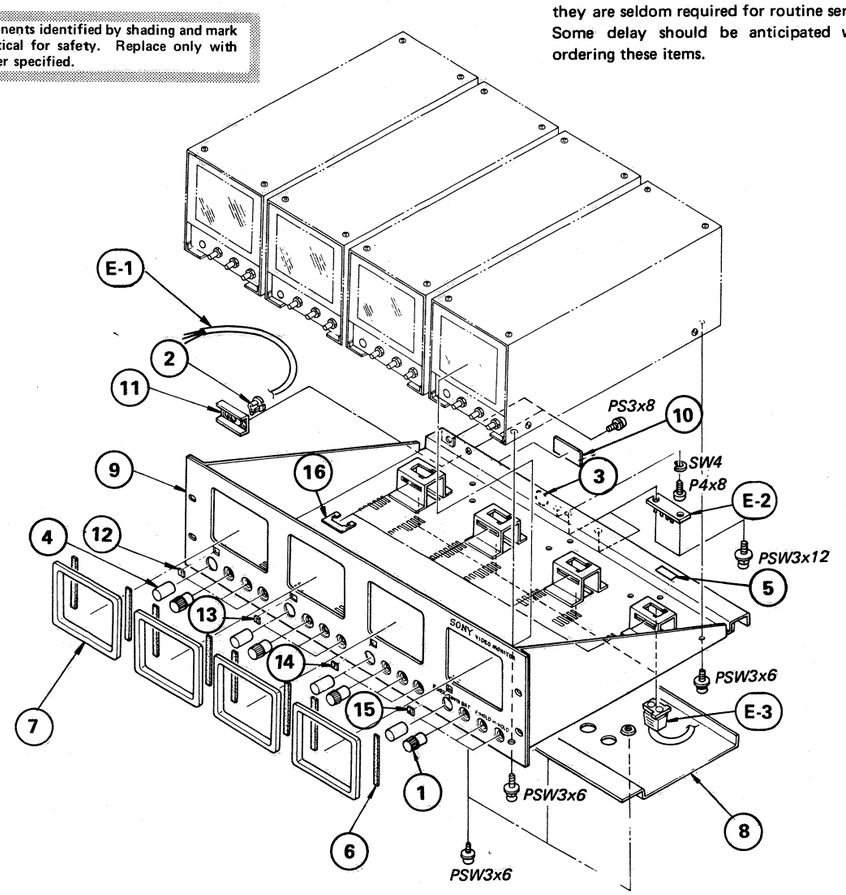
SECTION 5
EXPLODED VIEWS

(1) FRAME & EXTERNAL PARTS

Note

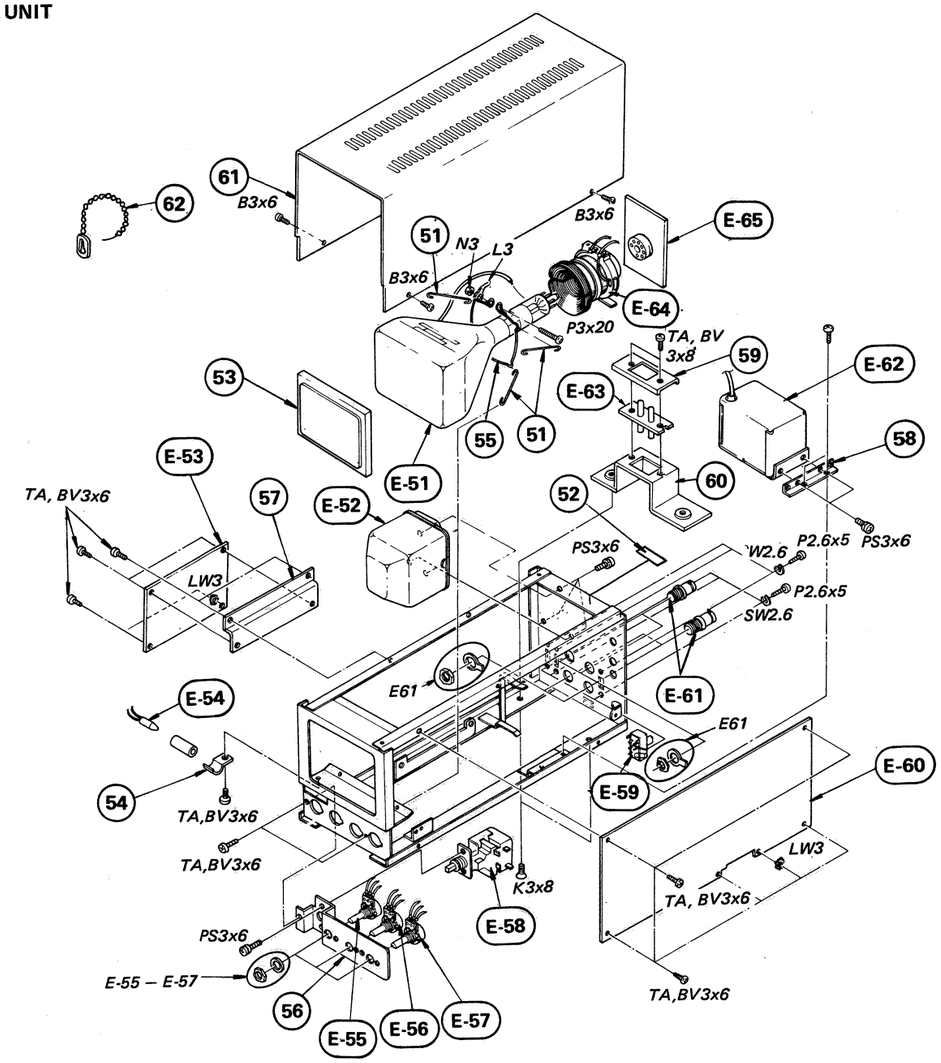
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- As to the part numbered with E-, refer to the electrical parts list.
- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.



Ref. No.	Part No.	Description	Remark
1	X-4318-505-0	Knob Ass'y, control	
2	⚠ 3-005-073-00	Bushing, cord	
3	3-418-709-00	Label, ground terminal	
4	3-701-984-11	Button, switch	
5	3-703-057-01	Label, PTB exception	
6	4-018-903-00	Cushion	
7	4-018-936-00	Mask	
8	♦ 4-025-816-00	Enclosure	
9	♦ 4-025-819-00	Frame	
10	4-025-820-00	Label, model number	
11	4-025-821-00	Holder, bushing	
12	4-025-823-01	Plate, number-1	
13	4-025-823-11	Plate, number-2	
14	4-025-823-21	Plate, number-3	
15	4-025-823-31	Plate, number-4	
16	4-302-735-00	Spacer, inter-lock	

(2) UNIT



Ref. No.	Part No.	Description	Remark
51	2-069-704-00	Hook, picture tube fastening	
52	♦ 3-703-058-01	Label, PTB exception	
53	4-003-819-11	Protector	
54	4-018-928-00	Holder, neon lamp	
55	4-018-959-00	Fastener, picture tube	
56	♦ 4-025-810-00	Bracket, variable resistor	
57	♦ 4-025-811-00	Heat Sink	
58	♦ 4-025-812-00	Bracket, HV block	
59	♦ 4-025-813-00	Plate, 2p terminal fastening	
60	♦ 4-025-815-00	Bracket, 2p terminal	
61	♦ 4-025-817-00	Cover	
62	4-308-870-00	Clip, lead wire	

SECTION 6
ELECTRICAL PARTS LIST

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

- ⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.
- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

CAPACITORS

- All capacitors are in μF and ceramic unless otherwise noted. 50WV or less are not indicated except for electrolytics. p : μμF, elect : electrolytic

RESISTORS

- All resistors are in ohms. Common ¼W carbon resistors are omitted. Refer to the list on the last page for their part numbers.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
  kΩ : 1000Ω, MΩ : 1000kΩ

COILS

- All coils are microinductors unless otherwise noted.

C BOARD

Ref. No.	Part No.	Description		Remark
	♦ 1-602-509-00	C Board		E-65
		CAPACITORS		
C431	1-108-389-00	0.1	100V mylar	
C432	1-108-377-00	0.01	100V mylar	
C433	1-129-733-00	0.01	630V film	
C434	1-129-733-00	0.01	630V film	
C435	1-108-389-00	0.1	100V mylar	
		RESISTORS		
R431	1-202-621-00	100k	½W composition	
R432	1-244-861-00	330	½W composition	
R433	1-244-873-00	1k	½W composition	
R434	1-202-613-00	47k	½W composition	
R435	1-202-613-00	47k	½W composition	
SG431	1-519-063-XX	Spark Gap		
	1-526-521-XX	Socket, picture tube		

D BOARD

Ref. No.	Part No.	Description		Remark
	♦ A-1340-345-A	D Board, complete		E-60
		CAPACITORS		
C301	1-123-329-00	10	25V elect	
C302	1-101-888-00	68p		
C303	1-123-332-00	47	25V elect	
C304	1-108-389-00	0.1	100V mylar	
C305	1-123-329-00	10	25V elect	
C306, 307	1-123-333-00	100	25V elect	
C308	1-123-344-00	47	35V elect	
C401	1-102-975-00	100p		
C402	1-123-384-00	10	100V elect	
C403	1-123-253-00	22	160V elect	
C501	1-123-329-00	10	25V elect	
C502	1-108-383-00	0.033	100V mylar	
C503	1-123-352-00	1	50V elect	
C504	1-123-332-00	47	25V elect	
C505	1-123-352-00	1	50V elect	

Ref. No.	Part No.	Description	Remark
C506	1-101-880-00	47p	
C507	1-108-375-00	0.0068 100V mylar	
C508	1-123-354-00	3.3 50V elect	
C509, 510	1-108-383-00	0.033 100V mylar	
C511, 512	1-108-389-00	0.1 100V mylar	
C513	1-123-351-00	0.47 50V elect	
C514	1-123-334-00	220 25V elect	
C515	1-108-369-00	0.0022 100V mylar	
C516	1-108-381-00	0.022 100V mylar	
C517	1-102-983-00	220p	
C551	1-108-383-00	0.033 100V mylar	
C552	1-108-385-00	0.047 100V mylar	
C553	1-123-351-00	0.47 50V elect	
C554	1-131-371-00	10 16V elect	
C555	1-123-329-00	10 25V elect	
C556	1-131-361-00	2.2 20V elect	
C557	1-123-329-00	10 25V elect	
C558	1-101-880-00	47p	
C559	1-123-332-00	47 25V elect	
C560	1-123-348-00	470 35V elect	
C561	1-123-329-00	10 25V elect	
C801	1-123-345-00	100 35V elect	
C802	1-108-389-00	0.1 100V mylar	
C803, 804	⚠1-129-928-00	0.0027 630V mylar	
C805	⚠1-129-708-00	0.0033 630V film	
C806	⚠1-108-321-00	1.5 200V mylar	
C807	1-108-421-00	0.01 200V mylar	
C808	1-123-384-00	10 100V elect	
C809	1-129-731-00	0.0047 630V film	

DIODES

D301	8-719-815-55	1S1555	
D401	8-719-200-02	10E2	
⇒D402	8-719-305-15	GH3F	
D403	8-719-923-76	1S2076A	
D501, 502	8-719-815-55	1S1555	
D551–553	8-719-815-55	1S1555	
⇒D801	8-719-900-95	V09G	
⇒D802	8-719-305-15	GH3F	
D803	8-719-320-31	HF1C	

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
		COILS	
L401	1-407-706-00	120μH	
L501	1-407-159-XX	15μH	
L801	⚠1-459-081-00	HLC	
L802	⚠1-459-046-00	HWC	
		TRANSISTORS	
Q301	8-729-663-47	2SC1364	
⇒Q302	8-729-612-77	2SA1027R	
Q303–305	8-729-663-47	2SC1364	
Q401	8-765-012-20	2SC1811	
Q501	8-729-663-47	2SC1364	
⇒Q502	8-729-612-77	2SA1027R	
Q503	8-729-663-47	2SC1364	
⇒Q504	8-729-612-77	2SA1027R	
Q505	8-760-413-10	2SC1475	
Q551–553	8-729-663-47	2SC1364	
Q554	8-729-306-92	2SD669A	
Q555	8-729-304-92	2SB649A	
⇒Q801	8-765-132-00	2SC867A	
		RESISTORS	
R405	1-206-684-00	6.8k	2W metal oxide (nonflammable)
R506	1-247-032-00	68	1/8W carbon (nonflammable)
R564	1-244-979-00	1.2	1/8W carbon (nonflammable)
R569, 570	1-246-980-00	3.3	1/8W carbon (nonflammable)
R801	1-212-375-00	18	1W metal oxide (nonflammable)
RV401	1-224-648-XX	100k, adjustable; SUB BRIGHT-2	
RV402	1-224-646-XX	22k, adjustable; SUB BRIGHT-1	
RV551	1-226-099-00	4.7k, adjustable; V.SIZE	
RV552	1-226-029-00	1k, adjustable; V.LIN	
RV553	1-224-648-XX	100k, adjustable; BIAS	
RV801	1-226-263-00	2.2M, adjustable; FOCUS	
T501	1-405-760-00	Coil, H.OSC	
T502	1-437-034-00	Transformer, H. drive	

Ref. No.	Part No.	Description	Remark
		F BOARD	
	● 1-602-511-00	F Board	E-53
		CAPACITORS	
C601	1-123-348-00	470 35V elect	
C602	1-123-364-00	1000 50V elect	
C603–606	1-108-246-00	0.047	
C607	1-123-331-00	33 25V elect	
C608	1-108-246-00	0.047	
		DIODES	
⇒D601	⚠ 8-719-113-24	RD13E-B1Z	
D602–605	8-719-200-02	10E2	
F601	⚠ 1-532-078-00	Fuse, T1A	
F602	⚠ 1-532-279-00	Fuse, T500mA	
		TRANSISTORS	
⇒Q601	8-729-612-77	2SA1027R	
⇒Q602	8-729-316-12	2SC1061	
R601	⚠ 1-214-139-00	2k ±1% ¼W metal film	
R602	⚠ 1-214-140-00	2.2k ±1% ¼W metal film	
R605	⚠ 1-246-521-00	100k ¼W carbon	
	1-533-131-00	Holder, fuse	
		MISCELLANEOUS	
CN901	1-561-167-00	Connector, coaxial; ; VIDEO IN	E-61
CN902	1-561-167-00	Connector, coaxial ; VIDEO OUT	E-61
CN903	1-561-167-00	Connector, coaxial ; SYNC IN	E-61
CN904	1-561-167-00	Connector, coaxial ; SYNC OUT	E-61
J901	⚠ 1-536-497-00	Terminal, power cord	E-63
L901	⚠ 1-451-186-00	Deflection Yoke, DY	E-64

Ref. No.	Part No.	Description	Remark
NL901	⚠ 1-519-100-00	Lamp, neon; POWER	E-54
RV901	1-222-535-XX	1k, variable; CONTR	E-55
RV902	1-224-147-XX	20k, variable; V.HOLD	E-57
RV903	1-224-640-00	100k, variable; BRIGHT	E-56
S901	1-516-777-XX	Switch, slide ; VIDEO 75Ω	E-59
S902	1-516-777-XX	Switch, slide; ; SYNC SELECT	E-59
S903	1-516-777-XX	Switch, slide; SYNC 75Ω	E-59
S904	⚠ 1-552-503-00	Switch, pushbutton; POWER	E-58
T901	⚠ 1-446-760-00	Transformer, power	E-52
T902	⚠ 1-453-086-00	HV block	E-62
V901	⚠ 8-731-104-30	Picture Tube, CT-500	E-51
	⚠ 1-534-820-XX	Cord, power	E-1
	⚠ 1-536-476-00	Terminal Board, 4p	E-2
	⚠ 1-551-287-00	Cord, power with inter lock	E-3

ACCESSORIES AND PACKING MATERIALS

Part No.	Description	Remark
3-701-631-00	Bag, polyethylene	
4-025-806-00	Bag, protection	
4-025-807-00	Cushion, front upper	
4-025-808-00	Cushion, front rear	
4-025-809-00	Cushion, lower	
4-025-822-00	Carton	
4-495-929-11	Manual, instruction	

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

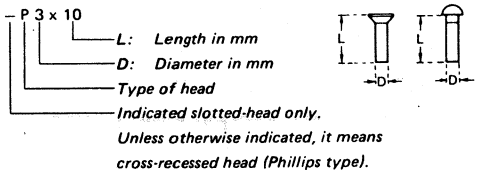
- Items marked "●" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

1/4 WATT CARBON RESISTORS

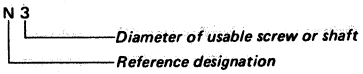
Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-576-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-577-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-578-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-579-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-580-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-581-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-582-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-583-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-584-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-585-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-586-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-587-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

HARDWARE NOMENCLATURE

Screw:



Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

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